ABSTRACT OF THE DISCLOSURE

An optical fiber, which has a zero-material dispersion wavelength equal to or greater than 2 μm, and a high nonlinear susceptibility χ^3 equal to or greater than 1 x 10^{-12} esu, and uses tellurite glass having sufficient thermal stability for processing into a low loss fiber, employs a PCF structure or HF structure having strong confinement into a core region. This enables light to propagate at a low loss. The size and geometry of air holes formed in the core region, and the spacing between adjacent air holes make it possible to control the zero dispersion wavelength within an optical telecommunication window (1.2-1.7 μm), and to achieve large nonlinearity with a nonlinear coefficient γ equal to or greater than 500W^{-1} km^{-1}.